IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Currently Amended) A microscope arrangement for imaging a sample ~~(20)~~ that contains ~~a~~ magnetically ~~and/or electrically~~ sensitive fluorescent ~~marker (21)~~ markers, ~~comprising~~ comprising:

[[-]] a fluorescence microscope ~~(10)~~ for exciting the markers with primary radiation for emitting fluorescence radiation and imaging the fluorescence radiation ~~(ν_F)~~ emitted by the markers from the sample ~~(20)~~;

[[-]] a field generator ~~(30)~~ for generating an inhomogeneous magnetic ~~and/or inhomogeneous electric~~ field ~~(33)~~ in the ~~sample (20)~~ sample to locally vary emission of the fluorescence radiation in a focal region of the sample;

wherein the field generator for generating the inhomogeneous field has a first pole body of a first polarity and second pole bodies of a second polarity, the first pole body being located between the second pole bodies and having a tip for forming the focal region in the sample, the tip of the first pole extending beyond the second pole bodies, wherein the focal region in the sample is across from the tip and the focal region has a size below an optical

resolution of the fluorescence microscope, and wherein a strength of the inhomogeneous magnetic field has a local minimum at the focal region; and

a processor configured to reconstruct distribution of the fluorescent markers in the sample from changes in the fluorescence radiation in response to moving the focal region.

2.(Currently Amended) ~~A~~ The microscope arrangement as claimed in claim 1, which is designed to alter the inhomogeneous field ~~(33)~~ within the sample ~~(20)~~ in a defined manner.

Claim 3 (Canceled)

4.(Currently Amended) ~~A~~ The microscope arrangement as claimed in claim 1, ~~characterized in that it comprises a data processing device for image processing of the~~ wherein the processor is further configured to process an image ~~(I_{FM})~~ recorded by the fluorescence microscope ~~(10)~~, the ~~data processing device being designed~~ processor being further configured to reconstruct the distribution of the fluorescent ~~marker (21)~~ markers in the sample ~~(20)~~ from ~~the~~ known spatial strength distribution of the inhomogeneous field ~~(33)~~ during ~~one or preferably several recordings~~ at least two images recorded by the fluorescence microscope.

5.(Currently Amended) A method of determining the spatial distribution of a

magnetically ~~and/or electrically~~ sensitive fluorescent ~~marker (21)~~ markers in a sample ~~(20), which method comprises the following steps~~, the method comprising the act of:

[[-]] ~~generation of~~ generating an inhomogeneous magnetic ~~and/or inhomogeneous electric~~ field ~~(33)~~ in the sample ~~(20)~~ using a field generator that has a first pole body of a first polarity and second pole bodies of a second polarity, the first pole body being located between the second pole bodies and having a tip for forming a focal region in the sample, the tip of the first pole extending beyond the second pole bodies, wherein the focal region in the sample is across from the tip, and wherein a strength of the inhomogeneous magnetic field has a local minimum at the focal region;

[[-]] ~~excitation of~~ exciting the markers to produce fluorescence radiation ~~(ν_F)~~ in the sample ~~(20)~~;

[[-]] ~~generation by means of~~ generating by a fluorescence microscope ~~(10) of~~ an image ~~(I_{FM})~~ of the fluorescence radiation ~~(ν_F)~~ coming from the sample ~~(20)~~, wherein the focal region has a size below an optical resolution of the fluorescence microscope;

[[-]] ~~calculation of the~~ calculating spatial distribution of the fluorescent marker ~~(21) by means of~~ using the generated image ~~(I_{FM})~~ and ~~by means of the~~ known strength distribution of the field ~~(33)~~.

6.(Currently Amended) ~~A~~ The method as claimed in claim 5, ~~characterized in that~~ wherein the inhomogeneous magnetic field ~~(33)~~ has a gradient of at least 10^2 T/m~~,~~

~~preferably of at least 10^6 T/m~~.

7.(Currently Amended) ~~A~~ The method as claimed in claim 5, characterized in that the inhomogeneous electric field has a gradient of at least 1011 V/m^2~~, preferably of at least 1015 V/m^2~~.

8.(Currently Amended) ~~A~~ The method as claimed in claim 5, ~~characterized in that the inhomogeneous field (33) has a~~ wherein the local minimum ~~(22) of field strength, especially~~ is a field-free point or region.

9.(Currently Amended) ~~A~~ The method as claimed in ~~claim 8, characterized in that the~~ claim 5, wherein a width of the local minimum ~~(22)~~ is smaller than the optical resolution of the fluorescence microscope ~~(10)~~.

10.(Currently Amended) ~~A~~ The method as claimed in claim 5, ~~characterized in that~~ wherein the sample ~~(20)~~ is located in a solution with the fluorescent ~~marker~~ markers.

11.(New) The microscope arrangement of claim 1, further comprising electrically sensitive fluorescent markers and a further field generator for generating an inhomogeneous electric field in the sample.

12.(New) The microscope arrangement of claim 1, wherein a width of the local minimum is smaller than the optical resolution of the fluorescence microscope.

13.(New) The microscope arrangement of claim 1, wherein a width of the focal region is about 1 nm.

14.(New) The method of claim 5, further comprising the act of moving a position of the focal region.

15.(New) The method of claim 5, further comprising the act of scanning a concentration of the fluorescent markers with a resolution in a nanometer range by moving the focal region.

16.(New) The method of claim 5, wherein the inhomogeneous magnetic field has a gradient of at least 10^6 T/m.

17.(New) The method of claim 5, wherein the inhomogeneous electric field has a gradient of at least 1015 V/m^2.